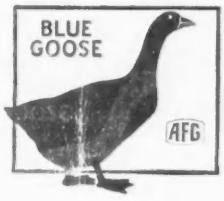
The Citrus Industry

THE ONLY PUBLICATION IN THE WORLD DEVOTED EXCLUSIVELY TO CITRUS FRUITS

Issued Monthly

Representative of every interest—
Representing no special interest

Vol. 2 No. 7 TAMPA, FLA., JULY, 1921 15 Cents a Copy



Progressive---Constructive

THE AMERICAN FRUIT GROWERS INC., is the most distinctively constructive factor in the fruit industry.

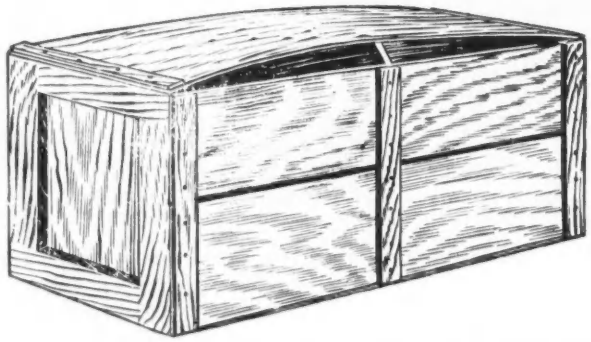
Progressive and alert, ready to embrace every practical suggestion for improvement, it holds itself free from all narrow prejudices, and bends all its energies toward the general advancement of the best interests of the entire industry, by the inauguration and consistent application of correct principles and methods in the handling of fine fruits.

It recognizes that its own and the grower's greatest success are inseparable. It has a correct understanding of the grower's problems and of the problems of successful packing and marketing, and it possesses the necessary organization, facilities and experience for meeting and solving these problems with maximum efficiency.

Its entire program is a Constructive Program and offers distinct advantages to every producer of high class products.

American Fruit Growers Inc.,

Orlando, Florida



STRONG, GOOD LOOKING

ORANGE BOXES

Made from tough, short leaf pine, practically free from heart, uniformly light in color, stand nailing without splitting.

Citrus fruit packed in good looking packages sells for more money than fruit in rough, dark colored boxes. Oranges and Grapefruit shipped in our boxes carry well. The good looking packages attract buyers and command better prices. Dealing with us, you are assured of quality, service and satisfaction. Your orders will have our careful attention.

W. A. MERRYDAY COMPANY

PALATKA, FLORIDA

Efficient

Durable

Economical

Price

$395.00

F.O.B.Factory

Grove Work Done on Time with the

Garden OLDSMAR Tractor

Citrus growers and truck farmers find in the OLDSMAR Garden Tractor the power, speed and dependability that it takes to get their work done on time No more delay in getting your work done when you use an Oldsmar More dependable than any mule—and it eats nothing when it is not working.

THE OLDSMAR is designed to replace the mule on the small farm or grove It plows, harrows, applies the fertilizer, cultivates the field, mows hay, hauls loads, and does the work of a stationary engine. Write for literature and let us show you how THE OLDSMAR is adapted to your needs

OLDSMAR TRACTOR CO.,
Manufacturers
Oldsmar, Pinellas Co. Fla.

Fred A. Bennett, Western Rep.
223-225 N. Los Angeles St.
Los Angeles, Cal.

The Citrus Industry
THE ONLY PUBLICATION IN THE WORLD DEVOTED EXCLUSIVELY TO CITRUS FRUITS
Issued Monthly
Representative of every interest—
Representing no special interest

Vol. 2 TAMPA, FLORIDA, JULY 1921 No. 7

Beneficial fungi In Citrus Groves

By H. T. Spears, U. S. Department of Entomology, Orlando, Florida

(Editor's Note: Dr. Speare is a scientist of note, and this article, dealing with the benefits to be derived from the introduction of new varieties of fungi, is certain to be of great interest to Florida citrus growers.)

Something over twenty years have elapsed since Prof. Rolfs published his first account of the value of the red-headed fungi in assisting in the control of scale insects in Florida. From 1897 until the present date there has been much discussion concerning these so-called friendly fungi, but time alone has settled many of the arguments, and today, more than in the early part of this period, it is possible to consider the subject from what is perhaps a just and reasonable viewpoint.

When the subject of control of citrus insects by beneficial fungi was first brought to the attention of the citrus growers, the hope was often expressed that they would prove to be a panacea for all citrus troubles caused by insects. Not only did this false hope exist, but it was clung to so tenaciously that nothing but widespread control by such fungi could satisfy those that held to this opinion. Absolute control, or extermination, never came, and never will come, but with time the true worth of these fungi became appreciated, and a more rational point of view has been adopted. At first their value was overestimated, then as a natural reaction their aid was underestimated, because as every one knows the human being is prone to go to extremes. As is often the case, the truth apparently lies somewhere between the two extremes, and many citrus growers today, while recognizing what a powerful ally they have in these fungi, do not rely on them too implicitly.

It is perhaps clearer today than ever before that insofar as the whitefly and purple scale are concerned, the various parasitic fungi are practically the only natural factors now present in Florida which restrain the excessive reproduction of these insects. It may be unequivocally stated that if it were not for these fungi, other things being equal, citrus growing would be an extremely hazardous, if not impossible occupation at the present time. There are several groves in the state in which so much dependence is placed upon these natural agencies that spraying machinery has never been purchased. Such an implicit faith in these fungi is probably a mistake at the present time, yet there are many groves, particularly those situated in hammocks, where injurious insects are not even considered as an inhibiting factor, and where during the course of ten or more years they have never proven to be such.

In periods of high prices there is an incentive for every one to spray, but in periods of low prices no one wishes to incur the expense involved in spraying operations, and it is at such times, which unfortunately are perhaps ahead of us, that the natural enemies will be particularly relied upon, and thanks to the work of the fungi here, groves not only will not suffer seriously, but will perhaps produce profitable crops.

Moreover, so important are these beneficial fungi regarded that the problem of the control of citrus diseases is becoming very complex, because, as is well known, any spray that is applied to control such diseases, at the same time prevents the development of the beneficial fungi to such an extent that the trees become literally plastered with purple scale and whitefly. Many growers dislike, for example, to spray with copper sprays against citrus scab because in so doing they kill off the beneficial fungi, and choosing between two evils, they prefer to take a chance with scab rather than to endure a widespread attack of purple scale and whitefly.

While, therefore, the value of the beneficial fungi is more generally appreciated now than formerly, it is equally well recognized in most of the citrus area, that practical control year in, and year out, does not obtain; that for some reason or another, not clearly understood, there are years of effectual control, or control for all practical purposes, but that these control years are followed by periods of varying length in which the fungi seem helpless.

The problem of today, therefore, is not "How much value are these fungi to the citrus growers?" but "By what means can this value be increased?" Can the fungi now present in the citrus groves be "speeded up?" Can they be induced to do as good work on high pine lands as they are doing in hammocks? Should one

assume that the fungi here are doing all they can, and that further experimentation will be fruitless? Should not steps be taken to introduce from other citrus regions, beneficial insects and fungi, that are not known here at present?

It is entirely possible that the value of the forms now present in the state can be greatly increased. If permitted to go on with their work unassisted, they will, perhaps, never be of greater value, relatively, than they are at present, as they are thoroughly distributed throughout the citrus area, and have probably reached the point of maximum abundance under the conditions which surround them. If this is true, the increased work that they can be induced to perform, for example, by one artificial application will be transitory, and lost after a given period of time, perhaps a year, and if unassisted further, they will without doubt drop to the status that they now occupy. Stated in another manner, it is evident that such artificial measures as are adopted, will have to be applied periodically in the same manner, for example, as the chemical sprays are now employed. If, however, a vulnerable stage in the life cycle of citrus pests is discovered, and the beneficial fungi are applied judiciously at this time, it is quite reasonable to believe that their artificial use will be found advantageous. As is well known, chemical sprays have to be applied at the right moment, if not so employed they are relatively valuesless, and, as a matter of fact, the application of such sprays is often done in such a careless manner, or with so little regard of the proper time, that the industry actually depends, in many instances, upon the work of the beneficial fungi.

The writer's experience with entomogenous fungi has been similar. If they are used wisely, and at the right time, appreciable results may be confidently expected, whereas if they are used at the wrong stage in the life cycle of their host, results are likely to be negligible. Obviously, to determine the proper time of application, it is necessary first to know how and where infection takes place, and in what stage the host is susceptible. It should be possible to determine these facts. Granting that under natural conditions the beneficial fungi are of the greatest importance to the citrus grower in Florida, it is apparent that there should be no stone left unturned to devise ways and means of increasing their efficiency artificially.

With respect to the introduction into this country of new natural enemies, it may be stated that such a type of work is neither new, nor is it uninvestigated. It has been successfully done here in at least one instance and in Hawaii in several instances with beneficial insects, but no tests of any magnitude have ever been attempted with fungi, so far as I am aware.

The writer spent four years in Hawaii and saw the borer beetle of the sugar cane at its worst. He also saw the succeseful introduction and establishment of an insect enemy which in two years so effectively controlled the beetle that it was difficut to find a specimen of the latter in fields of a certain plantation that previously had been so thoroughly infested with the beetle that it was difficult to find a place on the ground to step, so thick were the discarded cane stalks during the harvesting season. Florida would seem to offer just as favorable an environment for such work as Hawaii. It has no severe winters; it is surrounded on three sides by water, making it in effect insular, and in fact the citrus area is fairly well concentrated in the central and southern parts of the state.

It is a matter of common remark that Florida conditions seem particularly favorable for the propagation of beneficial fungi. For this reason an attempt should be made to introduce into this country fungus parasites of the whitefly and purple scale, the hope being that a form or forms would be found which would assist those we have at work now.

It is perhaps unreasonable to consider a fungus, from Japan for example, better than our red whitefly fungus, just because it comes from Japan, but there is a reason to believe that Florida does not possess all of the fungus parasites of the whitefly and purple scale in the world; that others exist, and that, furthermore, some of these forms, for one reason or another, may have a greater killing capacity than those present in the state now.

An attempt should be made to get such friendly fungi and insects here, because if more types of parasites can be established, choosing, of course, if it is possible to do so, those that vary from one another in their habits in order that the work of one may supplement the work of another, the chances of control or of a stage of control more nearly perfect than now possible, may be confidently expected.

CONTROL WHITEFLY WITH FUNGUS

Do you, Mr. Citrus Grower, want to get rid of the common and cloudy-winged whiteflies pestering your groves?

All right, now is your chance. The entomological department of the State Plant Board, Gainesville, has ready for distribution a supply of red and yellow aschersonia, both natural enemies of whiteflies.

A culture, the amount of fungus that can be readily grown in a wide-mouthed pint bottle, is sufficient to treat an acre of grove. These pure cultures are to be preferred to fungus obtained on leaves, because by their use there is no danger of getting any other disease in the grove. Directions for applying accompany each shipment. The price is 75 cents a culture, approximately the cost of production.

Dr. E. W. Berger, entomologist of the State Plant Board, says: "In localities where some of the cloudy-winged whitefly is present or where it is the only species, we recommend the yellow as well as the red aschersonia. To determine whether or not the cloudy-winged species is present, I would urge that all growers ordering fungus, or making inquiry, send us 20 to 30 leaves, collected at random from the worst infested trees, for examination."

Send money with each order. Otherwise your cultures will be sent c. o. d. Orders for one to three cultures will be sent by parcel post, if postage is included. Make all remittances to Sate Plant Board of Florida and address correspondence to entomological department.

Shipping weights: 1 culture, 2 pounds; 2 culture, 4 pounds; 3 cultures, 5 pounds.

For further information call upon your county agent.

SETTLING A BIG QUESTION

The following dialogue recently occurred in one of the tube mills, where two colored workmen had not been getting along as amicably as they should:

"You jest keep on pesticatin' around wid me," declared one of the men, "an' you is gwine to be able to settle a mighty big question for de scientific folks!"

"What question dat?" asked the other.

"Kin de dead speak!"

Brights Versus Russets

By Alfred Warren, County Agent St. Lucie County

In the Florida Grower of May 14, last, appeared an article under the title, "Fancy Fruit and Russets," by Dr. J. H. Ross, president of the Florida Citrus Exchange. This article should be carefully read by, not only every citrus grower in the state, but by every person who is interested in the citrus industry in one way or another. It is an article that contains much food for thought.

Among the many interesting and astounding facts brought out in Dr. Ross' article , there is one point that I wish to call to the attention of the citrus growers, and that is the preponderance of russet or fourth class fruit that is produced in this state. The citrus fruit sent to the four leading cities of the United States—New York, Chicago, Cleveland and Philadelphia—by the citrus growers of the state through their own marketing agency, the Florida Citrus Exchange, represents approximately 40 per cent of all Florida citrus fruit marketed there. This, therefore, will give us a fair index with reference to the general average of the different grades throughout the state. The following startling figures with respect to the average percentage of grades were brought out:

Fancy	Bright	Golden	Russet
1-3%	10%	28%	61 2-3%

My dear citrus grower, read those figures again and again and ponder over them. What great fact do they reveal? They emphatically reveal the fact that the average citrus grower of the state is not caring for his citrus grove in a business-like way. How long can any business enterprise flourish with 61 2-3 per cent of its products in the fourth, or last class? The time is coming, and coming fast, when there will be a keener competition, and if we expect to see the citrus industry of Florida continue to flourish and expand we will have to put it on a stricter business basis; that is, haphazard methods must be cast aside and the groves must be taken care of in the latest approved methods so that the preponderance of the fruit will be in the higher grades, instead of as now in the very last one.

In order to produce high quality fruit the citrus grower has to practice the latest approved methods in cultivating, fertilizing, pruning and spraying. All of these operations are equally essential, but if he wants to eliminate the russet class, if he wants to develop a fruit that is pleasing to the most critical eye, as nature intended the golden apple of the Hesperides should be, he must pay more attention to spraying and help nature combat the many insects and fungi that mar the beauty as well as the quality. The central thought of this article will therefore be on the value of spraying.

Let us now turn to the prices brought by the different grades of fruit in the four leading markets, again referring to Dr. Ross' article, and see where spraying might have been of benefit. These prices were as follows:

Fancy	Bright	Golden	Russet
$6.28	$4.98	$4.04	$3.40

Here note the difference in prices between the grades. Between the first and second there is a difference of $1.30; between the second and third, 94 cents; between the third and fourth 64 cents.

Suppose now the grower had so taken care of his groves that the grades had run as follows, and this would not be an impossible feat:

Fancy	Bright	Golden	Russet
10%	50%	30%	10%

What a tremendous difference there would have been in the returns to the grower!

The total number of boxes sent this past year to the four above-mentioned markets by the Florida Citrus Exchange was 1,088,216. Distributing this number among the grades with the percentages as just suggested, we would have the following interesting figures:

	Fancy	Bright	Golden	Russet
Percentage	10%	50%	30%	10%
Number of boxes	108,821	544,108	326,464	108,821
Price per box	$6.28	$4.98	$4.04	$3.40
Total selling price	$683,395	$2,709,658	$1,431,973	$389,991
Total of all grades				$5,215,017

What they actually sold for was as follows:

	Fancy	Bright	Golden	Russet
Percentage	1-3%	10%	28%	61 2-3%
Number of boxes	3,258	106,831	314,131	663,895
Price per box	$6.28	$4.98	$4.04	$3.40
Total selling price	$21,086	$532,019	$1,269,089	$2,257,243
Total of all grades				$4,019,437

Or a difference of $1,195,580, representing the gain that might have been made on the 1,088,216 boxes had the average percentages of the grades been as suggested above.

This past season the total citrus crop of Florida was 13,000,000 boxes. The above figures are based on 1,088,216 boxes, or 8.22 per cent of our total crop. Therefore, on the same basis, the citrus growers of Florida lost by lack of applying the proper grove methods the handsome sum of $14,544,768. This difference would have been practically clear "velvet" to the growers, as the total overhead expenses (including picking, packing, freight, commission, interest on capital invested, etc.) for a box of russets is practically the same as for a box of fancies.

Bringing the matter closer home, let us take the above basis for arriving at some idea as to what we might have gained on our county's crop of 400,000 boxes had the bulk of it been in the higher grades. The difference or the gain in the sales, would have been $447,976, a very handsome sum representing only one industry of a county.

As a matter of fact, though, and this is some consolation, St. Lucie county's fruit, coming as it does from the Indian river section, was above the general state average. Nevertheless, we have by no means reached that standard which we will attain when all the growers use the latest approved methods of science and of business in their grove management.

Judicious spraying pays many fold. Suppose you shift only two boxes of fruit per tree from the russet class to the bright class, you will by so doing gain $1.58 per box, or $3.16 per tree, to say nothing of the increased size of the fruit, the increased growth and vigor of the tree, and the larger bearing capacity of the tree for the following year. But we all know the benefits would be far greater. There is no good reason why the bulk of the fruit should not be in the bright and fancy classes. The average bearing tree per spraying will cost around from 10 cents to 15 cents. The maxi-

mum number of sprayings should not be more than seven; hence the total cost of spraying per tree per year (if as many as seven applications were made) would range from 70 cents to $1.05. This is less than the difference between the selling prices of a single box of brights and a box of russets.

It is the lack of spraying at the opportune time that produces the scabby, scaly, sooty, tear-stained and russet fruit. Quite often a grower will spray many times during the year, but at harvest time he finds that the bulk of his fruit is of the lower grades, because he has failed to spray at the opportune time. He may have sprayed seven or eight times during the course of the year and yet the results be unsatisfactory; while if he had made perhaps only four or five applications of the proper spray at the right time he might have harvested bright fruit.

It is gratifying to know that the citrus growers of St. Lucie county are doing excellent work this year in spraying. A very large number of new power sprayers were bought this year and the growers have made heroic efforts to control the citrus scab. Very good results have been obtained along this line this year. Nothing more can be done this year against this disease, for the time to fight scab is during the winter and spring months.

The enemies now to fight are rust mite, red spider, scale insects, mealy bugs, whitefly and the fungi which give rise to withertip and melanose.

Withertip and melanose are best controlled by keeping all dead wood out of the tree.

The long dry spell this year has brought out the rust mite in unusually large numbers. The grower should keep continual watch of this almost microscopic spider and spray "right now" if there are 50 or more to a leaf or fruit. To find this little pest a good pocket lens is indispensable.

If only rust mite and red spider are present use lime-sulphur, 1 to 70. If, in addition to rust mite and red spider, also scale insects, or whitefly, or mealy bugs are present, use the combination spray of oil emulsion, 1¼ gallons to 100 gallons of water, plus 2½ pounds of soda sulphur.

Whitefly can be killed successfully only in the young larval stage, which is just after they hatch from the eggs. By using the above-mentioned combination spray (oil emulsion-soda sulphur) against the whitefly, the following grove pests—rust mite, red spider, scale insects and mealy bug will also be controlled.

It is hard to tell at this time just what the prices will be on next season's crop. But this much is certain, the grower who has the bulk of his fruit in the higher grades will be able to sell at a profit, while the one who has chiefly russets may receive his returns in red ink.

Another grove operation might suggest itself here in the raising of our grades and that is the thinning of fruit on the trees where is a supercrop. The deciduous fruit grower thins his fruit on the tree to very good advantage; why not the citrus grower. I have reference particularly to cases where the trees are overloaded with fruit. In such cases the inferior fruit could be picked off early in the season, allowing only the desirable fruits to remain on the tree. If we wait until nature does the thinning the chances are that much of the cull fruit will remain and what might have developed into good fruit will fall off.

FIGS ARE WORTH SAVING

Figs are ready for canning and preserving. Do not let the opportunity pass of saving and utilizing one of the best fruits known. Miss Sarah W. Patridge, state home demonstration agent, suggests the following recipes:

Preserved Figs

Select 8 pounds fruit that is just mature or nearly mature. Sprinkle 1 cupful soda over the figs and cover with about 6 quarts boiling water. Allow to stand 15 minutes. Drain off this soda solution, rinse the figs well through two baths of clear cold water, and let drain.

Add the fruit gradually to a syrup made by boiling together 6 pounds sugar and 4 quarts water. Cook rapidly until the figs are bright and transparent, and the syrup is sufficiently heavy.

The figs may be removed to the rear of the stove and put immediately into sterilized jars and sealed.

Fig Conserve

Material: 1 quart figs (plain canned), or 2 pounds fresh figs, 1¼ pounds sugar, 2-3 cupfuls pecan meats, ½ pound raisins.

Cut all, except nuts, into small pieces and cook until thick and transparent (about an hour will be long enough to cook). Add nuts 5 minutes before removing from stove.

Fig Sweet Pickle

Prepare the figs as for preserving. Drop into boiling spiced vinegar, prepare as follows:

For 1 quart figs—secure ½ pint vinegar (cider), ¾ pound sugar, few pieces mace, ½ tablespoonful whole cloves, ½ tablespoonful allspice, 1 stick cinnamon, 2 pieces ginger root. Stick the cloves in the fruit. Tie the cinnamon and allspice in a bag. To the vinegar and water add the sugar. Drop in the spice bag. Boil for 3 minutes.

To the foregoing preparation add the figs and boil 10 to 15 minutes. Remove spice bag, pack and seal.

Fig and Nut Confections

Remove plump fig preserves from the syrup and drain. Place them in an oven which registers about 120 degrees F. (an angel cake oven). Dry slowly until outside of figs have lost their syrupy appearance. Dip in a syrup dense enough to thread. Stick half a nut on each side of each fig. Dip into granulated sugar.

To cream fondant add chopped figs dried as above, and broken nuts, form into nut bars. Roll in granulated sugar or use as candy centers.

GEM NURSERY COMPANY, MILLION DOLLAR FIRM, LAUNCHES ACTIVITIES

The Gem Nursery and Citrus Products company of Lake Gem, Lage county, capitalized for one million dollars, is beginning its activities, which encompass not only a nursery, but groves and the selling of fruit and by-products. In the packing of their fruit this company will ship only firsts and seconds, utilizing the carton pack, or one dozen oranges to the box, selling to the best trade.

Back of the company are such well known men as D. C. Sherman, who has been raising only choicest fruit under scientific cultivation; Dr. F. A. Reed, formerly of Ohio, and a grower of prominence, having been manager of the packing house at Eustis; L. E. Klatte, a merchant from Connecicut; John Heist, a well known business man of Chicago; E. V. Cartledge and A. M. Starbird, all grove owners.

SOMETHING WRONG SOMEWHERE

"Grandma," asked six-year-old Paul, "what makes Helen such a pretty little girl?"

"She is pretty," grandma replied, "because she is such a good little girl."

"But, grandma," Paul protested, "you are awful good."—Exchange.

A Talk to Florida Citrus Growers Only

By E. H. Favor, Managing Editor American Fruit Grower

I want to talk right out loud this time to the citrus fruit growers of Florida. No one else should read any further in this article, if he is not interested in the production of citrus fruits in Florida.

To the growers of citrus in the Seminole state, I want to say emphatically, that I am convinced one of the great reasons why you have obtained no better prices for your crop this year is because too much of it hasn't been worth the money. No, sir, it hasn't been worth any more than you have received. You have been lucky, very lucky, to have done as well as you have. While your fruit is just as juicy as could be desired, and is filled with concentrated sweetness, much of it is about as ugly in appearance as citrus fruits can be, particularly oranges and grapefruit.

Make a Comparison

Just as a comparison, look at the apples grown in the Pacific Northwest. If the apple growers of Oregon, Washington, or any other far western state would ship apples into Florida that looked as bad as much of your citrus looks, they would go broke. You wouldn't buy such apples.

Nature has been very good to citrus growers in making it possible for you to produce delicious fruits with a minimum of effort. But it is up to you to put the finish on the fruit that will make it stand out and meet competition. Florida oranges and grapefruit needs to be "dolled up" in looks. Just as soon as you put the golden skin on these fruits by removing the cause for the russet, you will see your sales extend, your yields increase and you profits heap up. Thorough spraying will do it.

May is the month when the citrus fruit trees of Florida should receive a very thorough application of oil spray for the control of some of the most expensive boarders that infest them—the whitefly, rust mite and scale insects. It is one of the most profit-making applications of the season, and not a grove in the state should escape it.

Too much of the citrus that went out of Florida this past season was badly russeted by the rust mite, scarred by thrips, flecked by purple and red scale, and otherwise showing defects common to unsprayed or poorly sprayed fruit. Just how much money it cost Florida citrus growers to feed these pests no one knows with any degree of accuracy, but it must have been well above the two million dollar mark. To have thoroughly sprayed the groves and reduced this loss to an insignificant sum would have been but a small fraction of the cost.

Can You Pay the Bill?

Can Florida citrus growers stand the expensive board bill run up by these useless pests? Can you afford to pay the feeding charges exacted by the destructive insects that infest your groves? Most assuredly you cannot if you expect to make a profit for yourself. In view of the excessive freight rates, which may continue into another shipping season, Florida growers cannot afford to market fruit that will not leave a profit after paying the heavy production costs and freight bills—unless they obtain their living from some other source.

Thorough spraying of citrus groves pays big dividends. It is the only effective means of producing fruit of the grades that bring the high prices. It is the only effective means of producing fruit that can be marketed as "bright" with the full assurance in advance that it will be bright, clean and free from the sooty mold and scale that must be scrubbed off at packing time.

Too much citrus this past season was below a profitable standard, simply because of its appearance. Appearances count with citrus fruits, just as with other commodity. Consumers buy fruit largely by its looks. The clean, bright waxy skin of an orange or grapefruit makes an appeal to the palate that is hard to resist, but there is nothing appealing in the looks of a russet. That is why the fruit stand merchants in many cities have forced such fruit onto their trade with the statement that "it is sweeter."

Does such fruit make a profit for you? Your income tells the story. When russets sell at $2 or $3 a box, and brights for $5 to $7, with both of them carrying the same freight and packing cost, even a blind man could see which was the most liable to bring in the profit. Yet when thorough spraying produces a crop that will pack 90 per cent bright against 80 per cent russet where there is no spraying, who would be so foolish as to omit the spray?

Time to Wake Up

Florida growers should arouse themselves to the money value of giving their groves thorough treatment with suitable spray materials at the proper seasons. Next to fertilizing, it is the most important operation in grove management and next to fertilizing it pays the biggest profit of any work that can be done in the grove.

This profit comes partly from the grade of the fruit being raised to a higher class because of its lack of russet, scars and stains. It also comes from the increased yield, as sprayed trees are more vigorous.

Remember that, Florida growers. It is your profit that feeds the rust mites, whiteflies and scales. That expensive fertilizer that you apply to your soil yields up its elements to fatten bugs instead of your bank account. Which is the most comforting to you? There is beauty in the whitefly. He is a charming little creature when viewed under a magnifying glass, but he don't pay your income tax. Instead, he takes a part of your income in advance, and obeys the biblical admonition to multiply and replenish the earth with his kind—at your expense, of course.

In fundamentals at least, there is not much difference in the production of citrus fruits and such fruits as apples, peaches or grapes. But the citrus grower in Florida has been especially favored by the Great Creator in having no such pests to contend with as does the apple and peach grower. There are no insects or fungi of citrus comparable in destructiveness to the coddling moth of apples, apple scab, peach curculio and brown rot. Then, too, the citrus grower has the faithful and splendid assistance of nature's own helpers,

(Continued on Page 19)

The Citrus Industry

ISSUED MONTHLY
By
ASSOCIATED PUBLICATIONS CORPORATION

Office of Publication, 411 Curry Building
TAMPA, FLORIDA
Los Angeles Mobile Ponce, Porto Rico

Address all communications to the Tampa Office

S. L. FRISBIE, Editor and Manager

TELEPHONE:
Editorial and Business Office 4819

D. W. HADSELL.....Consulting Pomologist

Subscription $1.00 per year in advance

Entered as second-class matter February 16, 1920, at the postoffice at Tampa, Florida, under the act of March 3, 1879.

FLORIDA GROWERS SHOULD IMPROVE GRADES

THE CITRUS INDUSTRY this month devotes considerable space to the necessity for an improvement in the grade of fruits shipped from the state to the distributing and consuming markets of the North.

There has never been any question as to the quality of Florida citrus fruits. In point of flavor and juice content the citrus fruits of this state hold a position of pre-eminence which is acknowledged by discriminating buyers everywhere. The one thing in which Florida citrus fruits are lacking is in matter of appearance.

This condition would be regrettable if it were unavoidable. Fortunately, it is not unavoidable—which makes it all the more regrettable.

Florida can produce as fine appearing citrus fruits as California or any other citrus producing section, and the only reason so large a percentage of the Florida fruit which goes to market is ranked as third or fourth grade is because the Florida growers have not yet fully recognized the extent of the loss which they annually pocket by reason of their inattention to the appearance of their fruit.

When the figures presented by such a great marketing organization as the Florida Citrus Exchange show that more than 60 per cent, or nearly two-thirds of the fruit sent through this organization to the four greatest distribution centers of the land is classed as fourth grade or russets, there is something radically wrong in the management of Florida groves.

It is useless to point out that fourth grade or russet fruit is just as sweet, just as juicy, just as palatable as the fancy or bright grades. The fact remains that it doesn't LOOK as good—and by far the greater portion of the crop must be sold on its appearance rather than upon its interior excellencies.

Mr. E. H. Favor, managing editor of the American Fruit Grower, points this out most clearly and emphatically, but not more so than Mr. Alfred Warren, county agent for St. Lucie county, or Mr. George T. Tippin of Vero, all of whom discuss this problem of improving the grade of Florida fruits in this number of The Citrus Industry.

Of course, such russet fruit as is produced must be placed on the market in some manner and at some price. But the thing for the intelligent growers to do is to reduce this grade to the minimum and to correspondingly increase the production of fancy and bright grades. Instead of producing one-third of 1 per cent fancy and 10 per cent bright, as against 61 2-3 per cent russet, Florida growers should find it possible to place at least 50 per cent of the crop in the first two grades and to reduce the production in the fourth or russet grade to 10 per cent.

This can be done in one way, and in one way only—by proper spraying at the proper time. The cost to the grower, as shown in the figures given by Mr. Warren, is as a mere nothing compared to the increased selling value of the higher grade fruits, and as he also points out, this treatment of the trees at the proper time may mean the difference between a crop sold at a profit and one sold at a loss. It is the high grade fruit which nets the grower the best price—always.

Instead of trying to convince consumers that russet fruit is "just as good" as the fancy or bright grades, Florida growers should expend their energies in producing a fruit which makes as fine an appearance as the fruits of any other section. This is entirely within the realm of possibility. All that is necessary is the intelligent application of a little time, energy and spray material at the proper time.

Let's all get together to lift the Florida citrus crop of the russet class and place it in the fancy and bright grades—where nature intended that it should be.

A PROGRAM FOR LEADERSHIP

IF there is any one thing which, more than anything else, retards the activities of farmers, it is lack of facilities for bringing farm interests to public attention.

The farmers, like any other group of citizens with largely common interests, have particular problems that need solution. Investigation and in some cases legislation are necessary for solving these problems. With the vast number of complex projects seeking attention, however, attention is obtained usually only by exerting strong influence, says the Farmers' Home Journal.

Farm organizations are useful in this respect. The fact that in the last few years the farmer has in part abandoned his isolation and his individualism and has co-operated strongly with his fellows has greatly increased the attention paid to agriculture.

Organization alone, however, will not accomplish the desired result. Leadership is necessary. Indeed, the organizations themselves depend largely on competent leadership. If one studies the membership of successive United States congresses, one will see that each of them had about the same average ability in its membership. Yet some of them took long constructive steps. Others did nothing, or slipped backward. What was the reason? Leadership—and lack of leadership.

Specific efforts should be constantly made to train farm leaders. Farm life itself, with families always isolated much more than in the city, does not of itself tend to develop leadership. The capacity for leadership exists in probably about the same proportion of men and women on farms as in cities. But it needs development if it is to be utilized.

Schools, colleges and other institutions are helping to develop agricultural leadership. A more definite program is necessary, however. The precise type of leadership that is needed on the farm should be worked out by investigation and a national program devised to develop it. Schools, churches, farm organizations, any institutions that can give assistance, should co-operate, and every possible leader should be reached.

LIBELLING THE SOUTH

OUR attention has just been called to an article in the Pacific Coast Dairyman, entitled "Why the South Lacks Pep."

There are just two things wrong with the article. In the first place, it is wrongly labelled; and, in the second place, it isn't true. It should have been headed, "Why We Wish the South Lacked Pep;" then what followed would have been the logical progeny of the expressed desire.

A careful perusal of the article fails to disclose two very important items, i. e., either that the South does lack pep, or any lucid reason for the lack. The only thing which is made clear, beyond peradventure, is the desire of the writer to make his readers believe that the South does lack pep.

Being a dairy publication, the Pacific Coast Dairyman naturally turns its attention to that line of thought, and sets forth what the South might be doing in dairying. But it fails to tell what the South has done. It forgets the great dairy herds of Texas; ignores the dairy interests of Louisiana; fails to mention that Mississippi still hold's the world's record for the champion bull of any age or breed. It overlooks the fact that when the Western dairyman wants to improve his herds, he looks to Tennessee for his source of supply.

If that benighted westerner will tear himself away from his sage bush pastures long enough to pay a visit to South Florida, we will show him more real, genuine, dyed-in-the-wool pep in twenty-four hours than he has seen in a lifetime on the "Western Slope."

There are some things, no doubt, which the South lacks, notably the westerner's natural inclination and acquired habit of boosting everything which bears a local tinge. The southerner never has acquired the habit of calling a hill a mountain or a pond a lake, merely because it was located in his county or his state. But any gentleman from the West who thinks that the South lacks pep, has another guess coming. Many a Yankee who has "come South" with the idea that the South "lacks pep" and that the injection of a little northern vim into business would bring the shekles flocking his way, has been introduced to a new-fangled sort of southern pep the like of which he had never dreamed before.

This is a big country and a great country. Each section has its capacities and its limitations. We have a great North and a great East and a great West, but we have also a Great South, which is none the less great because of an habitual tendency on the part of certain jealous-hearted individuals in other sections to belittle and berate it. When we have acquired the western habit of thought and speech, where "every rivulet is a mighty river, every mole hill a mountain, every mudhole a lake, every tree a forest, and every man a liar," we will have about everything possessed by any other sections—and a lot of things which no other section does possess.

Fighting citrus pests, the benefits of fertilization, the necessity of spraying, the advantages of irrigation—these are just a few of the many growers' problems handled in this issue of The Citrus Industry by men who know whereof they speak. The Citrus Industry aims to make each issue of interest and value to its readers.

He who makes haste slowly is the winner in the end—in the citrus industry, as in other lines of endeavor.

The man who is content with a russet crop should not complain when he has to pocket a "russet" price.

WATER TRANSPORTATION

THE CITRUS INDUSTRY is glad to note that steps are being taken by Florida citrus interests to investigate the possibilities of citrus shipments by water.

While it is improbable that any great percentage of Florida citrus fruits will ever be shipped by water, save such as are carried to foreign markets, the diversion of even a small part of the citrus shipments to water routes is bound to have a marked bearing upon the transportation problem. Whenever Florida citrus fruits begin moving by water, even in limited quantities, shippers may expect to find a disposition on the part of land transportation companies to facilitate shipments and meet just demands in the matter of rates and diversions which, in the absence of water competition, it has been almost impossible to secure.

Then, too, there exists always the possibility of making shipments by water to many of the central distributing points in at least as quick time and certainly with as little damage in handling as by the all-rail routes.

The citrus shipper has everything to gain and nothing to lose by the encouragement of water transportation for the products of his groves.

FIGHTING CITRUS PESTS WITH FUNGI

IT is with much pleasure that The Citrus Industry presents a leading article by Dr. A. T. Speare of the United States Bureau of Entomology on the subject of "Beneficial Fungi in the Citrus Groves."

Dr. Speare is recognized as one of the ablest authorities in his line, and his article in this issue treats so clearly and concisely of a subject in which every citrus grower is directly interested that it merits the most careful consideration.

Dr. Speare believes that the beneficial effects of fungi in the citrus groves may be greatly enhanced by proper handling and that the introduction of fungi from other citrus-growing countries may be an aid in supplementing the work of the fungi now employed in the Florida groves. His suggestions are entirely along the line of scientific probability, and his article is of the greatest value to progressive Florida growers.

A packing house of entirely new design is being erected at Fort Pierce by the firm of Brogden, Ricketts & Haworth of Tampa. This firm has devised an entirely new system of construction and arrangement of machinery, which it is claimed greatly reduces the cost of construction and operation, while doubling the capacity of the plant. The first of these plants, now being erected at Fort Pierce, will be watched with interest by packing interests of the entire state.

The new Oldsmar Frost Protector, being manufactured by the Oldsmar Tractor company at Oldsmar, Fla., is meeting with great favor, both in Florida and California. Already many thousands of the new heaters have been ordered by growers of the two states, and it has been found necessary to increase the capacity of the plant at Oldsmar to meet the demands for this popular-priced heater.

The speculator may not plant as many citrus groves next year as during the past two seasons, but the grower who grows fruit for a living will be planting just the same.

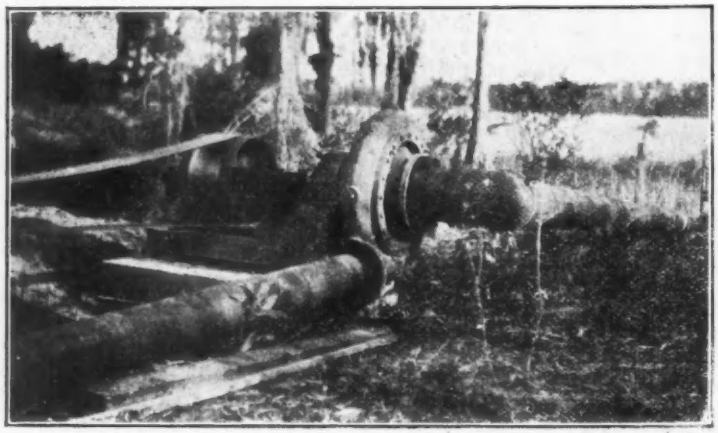
What are you doing to reduce the percentage of russets in the Florida citrus shipments next season?

Grove Irrigation In Florida

By D. W. Hadsell, Pomologist, formerly of U. S. Department of Agriculture

The three dominant factors affecting the profitable production of citrus fruits in Florida are favorable temperature, an abundance of available plant food in the soil, and a constant and liberal supply of soil moisture. With the exception of occasional periods of frost or freezing, our temperatures are very favorable to the production of citrus fruit. Many of our citrus soils are rich in the elements of plant food; to others less fertile, these elements may be profitably added in the form of commercial fertilizer. Precipitation records in the citrus belt of the state show an average over a long period of time of about 52½ inches a year, which were it well distributed would be sufficient. In the irrigated citrus sections of California, ranging from humid to very dry atmospheric conditions, it is found necessary to have from 30 to 40 inches of water per year, including both irrigation and rainfall. In the Hood river and White Salmon valleys in Oregon and Washington, noted for their production of high quality apples, irrigation is not necessary, unless the orchardist grows certain cover crops; here the rainfall is about 30 to 35 inches per year. In many of the famous orchard sections of the eastern states the rainfall runs around 35 inches per year. The soils, however, are usually much more retentive of moisture than our Florida pineland soils, and the rainfall is not so likely to be deficient in the spring months when bloom and young fruit are starting to grow. Thus it is not in the total precipitation that Florida is lacking. It is the irregularity of rainfall, and the marked deficiency during the months of November, December, January, February, March, April and May which frequently works havoc to the grower's income.

The average monthly precipitation in the citrus belt is about four and one-half inches. An analysis of the records of the weather bureau, covering a 24-year period commencing in 1892, shows that during seven of them there was a yearly deficiency of over four inches, reaching six and nine-tenths inches one year, and over five inches deficiency at three different times. As these deficiencies usually occur at a critical period of growth in the spring, they frequently prove the limiting factors of crop production, and nullify the expectation of good crops, even with the best of care as to cultural methods on the part of the grower. During the above-mentioned period of years the average monthly rainfall during January, February, March and April was but two and nine-tenths inches, only about one-half the average monthly rainfall which we would have with even distribution. The months from November to May are those of low precipitation; the following months are those of excess precipitation. It has been found that during a long period of years a deficiency of rainfall such as to inhibit the normal growth and development of the citrus tree and fruit, has occurred on the average of every other year, and during such deficient years a suitable irrigation system would go far toward insuring a good crop development, with the probability of higher prices received than ordinarily expected.



Centrifugal Pump with Suction Pipe from Lake Butler; Six Inch Main Leading Into Grove

The great value of optimum moisture conditions in the soil is not realized until we see by personal observation the decided changes which occur in the growth of branch and fruit under irrigation or favorable climatic conditions during the year. The season of 1920 presented climatic conditions so favorable to tree growth that groves throughout the state appeared to the writer to be uniformly in better condition than during any fall or winter period of recent years. A continuous supply of soil moisture, where adequate plant food is present, results in a steady, healthy and normal growth of tree and fruit.

In this respect attention may well be directed to the results obtained by Mr. C. Ringdahl on a St. Lucie river hammock soil. His grapefruit grove, planted seven years ago, on sour orange stock, produced a crop of 1,200 boxes per acre. This phenomenal crop production is the result of a combination of heavy fertilization with a high grade, seasoned organic fertilizer, plus a rich hammock soil, plus a continuous and liberal supply of soil moisture. His trees are planted on ridges to secure good drainage in times of excessive rainfall. Such results would not be expected on high pine land soil under ordinary conditions, and it is very doubtful that they could be approximated even on pine land soils with irrigation and heavy fertilization. It is the writer's opinion, however, that on pine land soils or high hammock soils, citrus trees planted on the stock best adapted to the land, heavily fertilized and properly irrigated, would in a large number of cases show an average annual increase in a crop of from 100 per cent to even double that. The greatest increase would be realized in years of rainfall deficiency, particularly in the late fall, winter and spring months.

The citrus tree, unlike the deciduous tree, transpires water the year

round, and consequently is pumping moisture out of the ground all winter, though it is showing no new vegetative growth. If the late fall and winter rains are deficient, this is likely to result in a deficiency of soil moisture in the spring when the citrus tree is putting out its new spring growth, and if at this time there is a continued dry spell, as is so frequently the case, bad results are very likely to follow, as shown by wilted leaves, excessive dropping of fruit after it is set, and mediocre growth of foliage. This has been the case this spring in many sections. Although there was a decidedly profuse bloom in nearly every part of the state this spring, there has been an excessive dropping of young fruit during March, April and May as a result of the severe drought. Many groves on moist soils, which held this moisture during the drought, did not suffer in this way. Others on high pine land soils under irrigation were similarly free from drought injury.

Artificial irrigation, combined with cultural irrigation or tillage, gives the intelligent grower additional regulation over the character and quality of growth of both fruit and foliage. Fertilizer applied broadcast, as is commonly done in most of our groves, does not take effect on the trees until it comes into contact with the roots in a dissolved condition. In the spring, and frequently in the fall, the top soil is stirred up by tillage into a three-inch layer of dry sandy mulch. Fertilizer applied on this and cultivated in is then a component of this three-inch mixture, where in the absence of rain or irrigation, it bakes, deteriorates, loses some of its ammonia and fertilizing value, and part of it represented by its superphosphate content reverts to an insoluble form which is to all practical purposes permanently lost to the tree. Where irrigation is used, the grower is enabled to apply water after fertilization, and thus secure immediate action in the solution of the fertilizer, followed quickly by tree assimilation through the roots. With irrigation a vigorous spring growth can be stimulated and maintained. By its regulation in the fall early fruit may be induced to mature earlier, and small fruit may be increased in size. A rapid growth in spring and summer, followed by a slower growth in the fall and winter, tends to produce a fine quality of fruit, and this type of growth may be promoted by the regulation of irrigation.

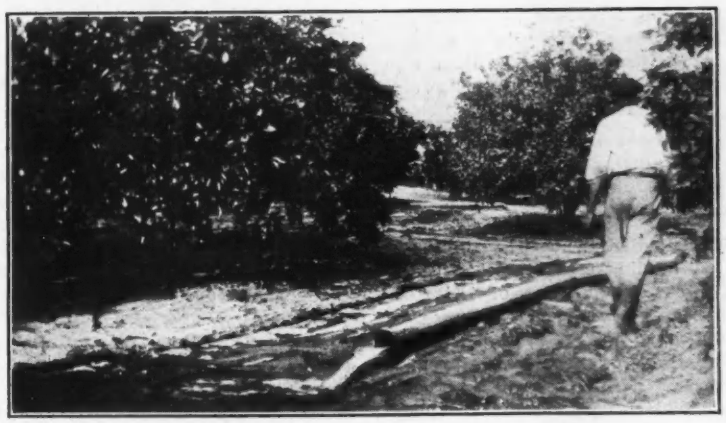
The cheapest and most practical system of irrigation of groves in Florida is surface irrigation. Where sub-irrigation is used, the citrus roots clog up the sunken tile. Overhead irrigation is very expensive and is subject to large losses of water through evaporation. The furrow system and the jointed pipe system are both good methods of surface irrigation applicable to Florida conditions, and require high pressure iron or steel pipe only for the main delivery line. According to Irrigation Engineer F. W. Stanley of the U. S. Department of Agriculture, "Loose sandy soils are peculiarly adapted to holding water on the surface for a considerable time when they are dry. It is then possible to run good heads of water 600 to 700 feet." The distance which the water will run down a furrow depends upon the character of the soil and the head of water employed. In some of the grove soils around Orlando, it was found that a head of 25 gallons per minute was ideal for furrow irrigation, while on a coarse sandy soil at Maitland this head was useless, but when it was increased to 120 gallons per minute the water could be run a distance of 650 feet. If a large head cannot be provided for on such coarse sandy soils, the alternative is to employ the jointed pipe system for the distributing system.

With an adequate source of water at hand, such as a lake, a main line of steel or iron pipe may be laid to carry the water to the top of the grove, where it is connected with the distributing system. This system will vary according to the class of soil, area of grove, contour, and so on. Where the head of water in the distribution system will be over 15 feet, it will probably be necessary to install some more iron or steel pipe. A standpipe may well be put in where the steel main empties into the distribution pipe, so as to regulate the head of water delivered at that point. Terra cotta pipe has been successfully utilized by Engineer F. W. Stanley to distribute the water over the grove, laying it along the highest ridges of land, and providing outlets down each tree row which may be turned on as desired. Then if the soil is not too coarse, and if the head is sufficient, the grove may be irrigated by turning the water down prepared furrows, from three to four in each tree row. Or with low heads on a coarse soil, light portable pipe made of 24-gauge galvanized iron six inches in diameter may be used. This pipe is jointed together by hand, attached to the outlets in the terra cotta pipes and the water turned on. As each tree space is irrigated, a joint is pulled off, and the irrigator continually works back towards the terra cotta outlet connection, throwing each joint pulled off over into the next row to be connected up for its irrigation.

To properly design a successful irrigation system for a grove requires the advice of a capable engineer, or a person familiar with the problems involved, so as to secure efficient results from the equipment purchased. There are, however, a number of valuable publications available to which those interested in this subject may go for added information, namely:

"Irrigation in Florida," Bulletin No. 462; "Spray Irrigation," Bulletin No. 495; "Use of Concrete Pipe in Irrigation," Bulletin No. 906;

(Continued on Page 12)



Irrigation Insures Tree Vigor and Fruitfulness

The Everbearing Orange -- Its Origin

The recent publicity given the discovery of an everbearing orange tree in a grove at Avon Park, and the announcement that this variety would be propagated for extensive planting, has brought out a great deal of discussion in citrus circles.

This discussion has covered a wide range, from the ultra-optimistic view that the discovery would entirely revolutionize the Florida citrus industry, to the opposite extreme that the new variety would have little influence upon commercial citrus growing in the state.

In view of the great interest which has been shown in the announcement, the following letter from Mr. E. N. Reasoner of Oneco, recognized as one of the best citrus authorities in the state, will be of peculiar interest at this time. Mr. Reasoner declares that the new variety is in fact not "new" at all, but merely a re-incarnation of an old and well established variety. He believes that it will find its greatest value for home planting, and recommends it particularly where space is limited.

Mr. Reasoner's letter follows:

Oneco, Fla., June 24, 1921.

Mr. S. L. Frisbie,
Tampa, Fla.

Dear Sir: In view of the publicity given the everbearing orange recently it might be worth while to mention it in next issue of The Citrus Industry.

I recall my first introduction to the everbearing orange along about 1886, and I note my brother mentioned it in his Bulleten No. 1, Division of Pomology, Department of Agriculture, 1887.

Mr. Charles B. Pelton, the originator and disseminator, is still alive and living at his old home in Lake Helen, Fla., and might be glad to give you further notes on it. It is rather amusing to old-timers to see the way these newcomers over at Avon Park "fell" for such an old standard sort as they did. We have not propagated it for years and I do not know of any firm that has. Prof. Hume mentions it in his work very scantily. Personally, I consider it a good sort for a home place, where one has room for only one or two trees, and I ought to have it propagated again. Our oldest tree is not over 20 years old now, as I had the original one removed from a test plot some years ago. There are numerous trees over the state and several around Avon Park, dating back to early settlement of the town, and possibly came from us originally, as Mr. Edminston, on whose place (now owned by another party) the tree of greatest age is growing and fruiting, was one of our valued customers.

This Pelton everbearing orange is a very good fruit for home use, but too variable in size and too oblong, I should estimate, to be of commercial value. It fruits several times a year, if well fertilized and cared for, doing immensely better with a little more fertilizer and water than the average tree needs. I think it would be best budded on Cleopatra mandarin root for general planting.

Yours truly,
E. N. REASONER.

Mr. Reasoner also encloses a letter from T. R. Robinson, crop physiologist in the United States Bureau of Plant Industry, Washington, D. C., from which it appears that the government bureau also has taken up the matter of determining the origin and characteristics of the everbearing orange.

Mr. Robinson's letter is given below:

Washington, D. C., June 17, 1921.

Mr. E. N. Reasoner,
Royal Palm Nurseries,
Oneco, Fla.

Dear Mr. Reasoner: I am very much obliged to you for your report on the everbearing orange tree from Avon Park. I also had a letter recently from Mr. Charles B. Pelton of Lake Helen, mentioned in your letter, in which he states he believes that the Avon Park fruit is derived from one of his original trees. It seems very probable. He sent me specimens of fruit from trees which he has at Lake Helen and states that there are quite a number of trees of this variety still grown there. The fruit corresponds perfectly with your description and, excepting the everbearing character, resembles very closely the so-called Lamb Summer.

Yours very truly,
T. R. ROBINSON,
Crop Physiologist.

GROVE IRRIGATION IN FLORIDA

(Continued from Page 11)

"Mulched-Basis System of Irrigated Citrus Culture," Bulletin No. 499; "How to Build Small Irrigation Ditches," Farmers' Bulletin No. 158; "Pumping for Irrigation on the Farm," Year Book Bulletin Separate, 1916; "Practical Information for Beginners in Irrigation," Farmers' Bulletin, No. 864; all of which are published by the United States Department of Agriculture, Washington, D. C.

In addition to the above list is published under the title of "Publications of the Division of Irrigation Investigations Office of Public Roads and Rural Engineering, United States Department of Agriculture," which list may be obtained by writing for it, and gives the titles of some 75 bulletins on various phases of irrigation.

In his bulletin, published in 1917, F. W. Stanley estimates that there are about 8,000 acres of irrigated citrus groves in Florida, the greater part beinng located in the Manatee county sections near Palmetto and Manatee. Irrigation of citrus groves is not widely practiced at present, yet we find among those who utilize this factor of citrus production some of the best posted growers in the state. Mr. S. O. Chase has a 300-acre irrigated grove at Isleworth on Lake Butler, irrigated by the jointed pipe system. He has installed centrifugal pumps at various points on the lake shore, some of which are driven by electric motors run on current generated by his packing house engine and dynamo, and others run by gas engines. From the pumps six-inch steel mains lead up into the grove along the ridges, with outlets between every three rows, on which swivel collar valves are attached. Onto these, portable 5-inch 26-gauge galvanized iron pipe is attached in 10 or 12-foot lengths and run down a row, and from this long line, short lines of similar pipe are attached to run down the short rows between each third row. Mr. Chase is well pleased with the past five years' results of irrigation and states that he believes irrigation will pay on the majority of pine land groves in Florida if the proper system is installed. The accompanying photographs were taken in Mr. S. O. Chase's grove at Isleworth in 1917, and show the various operations of irrigating by this system.

A Fifteen Months Old Grove

This grove has made such a wonderful growth that it almost stands out in a class by itself. Mr. Guy K. Maston, of Vero, Florida, is the owner and has given his personal attention to the planting and care of the trees. The trees when set were of medium size, are now 4 to 5 feet in height with good spread and some with more fruit on them than they should have.

Mr. Maston has kept a complete data of just how this grove has been handled and has kindly given it for the benefit of the readers of "The Citrus Industry," which will be of special value to those who have, and those who contemplate planting on similar lands. I was so impressed with the showing these trees have made, I felt that others will appreciate a brief history of its success.

Grove Data

Flat pine land, sandy loam, timbered, small percentage of palmetto, chocolate sand pan and yellow sand sub-soil.

Cleared in the summer of 1919.

December—Eight furrows were thrown up for the mounds. Holes blasted, using 1-6 pound of 40% dynamite. Holes were dug out, filled and well packed up to a level with the original contour of the ground, leaving each hole saucer shaped.

January—Approximately 3 cubic feet of semi-muck was placed in each mound left to thoroughly dry. Mounds were made around this muck and in finishing each mound about 3 inches of virgin soil was placed on top. These mounds were left to settle for about six weeks.

March—When the mounds were opened up to receive the tree the sand loam and muck were thoroughly mixed. 10 to 12 quarts of water was used per tree. No hand watering was necessary after the tree was set. The soil around the trees was well packed, covering the top of each mound with dry sand. A high rim was made around the circumference of the mound to form a basin to catch and hold the rain.

As soon as the trees begun to show green, ¼ pound of fertilizer was applied and scratched in. A like amount was given at intervals of six weeks to two months during 1920. In December, 1920, 2 pounds of 2% hardwood ashes were put around the outside of each mound, hoeing them in, but in no case so that the tree would get any direct benefit from the application. In January, 1921, 1 pound of fertilizer was applied, to each tree, and again in May a like amount was given. In June the trees were mulch hoed. A heavy mulching was used through the summer of 1920. It was probably two months after the trees were set before all the land was plowed.

The plat consists of 50 Temple oranges, 150 pineapple, 125 Valencia late, 48 tangerines.

GEO. T. TIPPIN.

BROGDEN, RICKETTS & HAWORTH COMPANY IS AWARDED CONTRACT

Fort Pierce is to have the most modern fruit packing plant in Florida. Contract for its construction and equipment has been awarded by the Fort Pierce Fruit Growers' association, branch of the Florida Citrus Exchange, organized there a few months ago, to Brogden, Ricketts & Haworth company of Tampa, and work is to start at once, so that the plant may be ready for operation with the beginning of next shipping season.

The plant will have a maximum capacity of six cars a day, will cost complete $40,000 and will involve a number of the latest ideas of the fruit packing industry not yet tried out in Florida. It will be a labor-saving plant, constructed and arranged so it is practically automatic in the performance of every step in the operation of washing, drying, polishing, sizing, stamping and packing. After the fruit is once dumped into the water conveyor it passes step by step through every process, ending up in the refrigerator car and packed and ready for shipment.

The building will be 68 by 168 feet, with the permanent portions of re-inforced concrete and partition walls of sheet iron, which would be removed in enlargement of the plant. It is so designed that the greatest advantage possible is taken of the forces of gravitation and mechanical power, permitting labor-saving features that will greatly reduce the cost of operation and packing. The plant is to be located on Lemon street, where a site was purchased some months ago.

The contractors have announced their intention of making a show plant out of it, with the idea of demonstrating the very latest methods in construction and operation of citrus fruit packing houses.

The Fort Pierce Fruit Growers' association was formed here a few months ago and includes in its membership quite a number of the largest fruit growers of this section.

WHITE CITY FRUIT CO.

The citrus industry is advancing in the community around White City, and is evidenced by the fact that the growers are rebuilding their packinghouse on a much larger scale.

The association was organized originally with $10,000 capital stock. About three years ago their packinghouse was destroyed by fire. This last spring the capital stock was increased to $25,000 by taking in new members. The new packinghouse will have a capacity of five cars a day and is equiped with the latest improved machinery.

Twenty-two growers are now members of the company and it is expected to double the membership in another year. The officers are: G. Ringdohl, president; H. Knudson, vice-president; S. Sorensen, treasurer; E. F. Ulrich, general manager; Miss Mary Hammond, secretary.

The White City fruit is packed under the Curlew Indian River brand. Owing to the high quality of fruit grown in this section this brand had established itself in the markets for five years previous to the burning of the packinghouse.

The principal growers here are imbued with the idea, and necessity of growing and packing good fruit and are employing best methods of culture and spraying to this end, realizing that the cost of picking, packing, shipping and marketing a box of poor fruit is as much as for a box of good fruit, which in many instances leaves a very small margin, if any, above actual expenses.

WHEN?

When is a box car not a box car? Ranger Nelson of the Chemical Laboratory claims a box car is not a box car when it is empty, in which case it is called a hopper. In fact, he claims any car that is empty automatically becomes a hopper.

What we cannot make out is what is a hopper when it is empty? Please send answers to Chemical Laboratory.

—By one of the "Chem. Lab'" boys.

Better Fruit Brings More Money

By Geo. T. Tippin, Vero

The sales report of the Florida Citrus Exchange, which was recently published, points a fact more clearly and forcibly than has ever been done before, or perhaps could have been done in any other way. That is the astounding fact that 61 2-3 per cent of all fruit marketed by the Exchange was russets or fourth grade. This ratio for the industry of Florida means no profit in the business from the grower's standpoint, for this per cent of poor fruit cannot be marketed by any agency at a profit to the grower, or be distributed in the markets without materially injuring the demand for the better grades, owing to the enormous quantity of it.

The competition of citrus fruit of the russet or fourth grade, with the better grades of oranges and grapefruit is much stronger than is the off grades of deciduous fruits with their class. The edible quality and quantity of a russet orange and grapefruit is just as good as the brights and goldens, and the buyer who serves them in half, in salads, marmalades, etc., knows it. Also knows he is getting a bargain when he can buy them at an average of $1 per crate less.

The inefficiency is either in the orchard or grove, or in the packing house, that permits this condition, before the fruit starts on its way to market. In some instances it may be in both, in some perhaps only one. In either case, it will have to be remedied, if the citrus industry of Florida is brought to the profitable and commanding basis that it should and could be.

If an expense of 10 to 15 cents per box used in thorough spraying would have pushed up 50 to 75 per cent of this large per cent of russets into the brights and golden grades, it would have meant 85 cents more to the growers.

If the inefficiency is in the grading in the packing house, and it possibly is in many instances, especially in local packing houses and association packing houses, where the disposition is to follow the lines of least resistance, where the grader allows fruit to pass freely into the fourth grade that by careful and painstaking sorting should go into the third and second grade. The successful marketing of a crop of fruit depends largely upon proper and uniform grading. I spent twelve years in the trade, packed apples extensively in nearly all the barreled apple districts of the United States and Canada, and some in the box apple districts, also in the larger peach-growing sections, and have some idea of what uniform grading means when it comes to getting all the value out of a crop of fruit.

The grower is most interested in the processes that net him the largest amount for the number of boxes of fruit he produces. A standard, uniform grade should be established for Florida citrus fruits and adopted by all packing houses, and through co-operative effort, as far as grading is concerned, handled in such manner as would mean that the grade marked upon the box, regardless of where packed, and not a box with some higher and some lower grades than should be in it under its mark. There is no one thing that gives more confidence to the buyer than to know he is getting a uniform pack and grade.

The grader should be the most efficient man in the packing house, for in his hands is the possibilities of loss or profit. A better grade of fruit must be grown in many instances by employing better methods, a better classification in the packing established, if the 61 2-3 per cent of russets is to be largely eliminated in order to make the citrus industry as profitable as it should be, keeping in mind that the efficiency of a marketing organization cannot overcome the mistakes that are made before the fruit starts on its way to market.

The following figures, which are a correct deduction made from the report of all the fruit sold in the four markets of New York, Chicago, Cleveland and Philadelphia by the Florida Citrus Exchange, will enable all parties interested to readily understand the great importance of the subject here discussed:

Figures taken from the Sealdsweet Chronicle, May 14, 1921:

New York Auction Sales to April 1, 1921

	Exchange Sales		
Fancy	3,358	$6.28	$ 21,088,24
Bright	68,161	4.94	336,715.34
Golden	189,719	4.22	800,514.18
Russet	417,265	3.53	1,472,946.45
Total	678,504	$3.87	$2,631,264.21

Chicago Auction Sales

	Exchange Sales		
Bright	16,071	$5.26	$ 84,533.46
Golden	39,880	4.18	166,698.60
Russet	81,978	3.44	282,004.32
Total	137,920	$3.86	$ 543,236.38

Cleveland Auction Sales

	Exchange Sales		
Bright	7,376	$5.06	$ 37,322.56
Golden	28,835	3.74	107,842.90
Russet	47,672	3.19	152,073.68
Total	83,984	$3.54	$ 297,239.14

Philadelphia Auction Sales

	Exchange Sales		
Bright	15,223	$4.81	$ 73,222.63
Golden	55,697	3.51	195,496.47
Russet	116,980	3.01	352,109.80
Total	187,900	$3.30	$ 620,828.90

Recapitulation of Figures for New York, Chicago, Cleveland and Philadelphia

	Exchange Sales		
Fancy	3,358	$6.28	$ 21,088.24
Bright	106,831	4.98	530,018.38
Golden	314,131	4.04	1,269,089.24
Russet	663,895	3.40	2,257,243.00
Total	1,088,216	$3.74	$4,077,338.86

The estimated cost per box, from tree to market, for the past season, including picking, packing, boxes, freight, sales expenses, etc., is $2.75, which on the New York auction sales leaves net to grower as shown in following table:

Grade	Boxes	Average Per Box	Estimated Cost	Net on Tree
Fancy	3,358	$6.28	$2.75	$3.53
Bright	68,161	4.94	2.75	2.19
Golden	189,719	4.22	2.75	1.47
Russets	417,265	3.53	2.75	.78
Totals	678,503	$3.88	$2.75	$1.13

The total sales in the four markets:

Boxes	Average Per Box	Estimated Cost	Net on Tree
1,088,216	$3.74	$2.75	$ .99

Percentage of grades to total shipment: 1-3 of 1 per cent fancy, 10 per cent brights, 28 per cent golden, 61 2-3 per cent russets. Result—99 cents net per box on the tree for total shipment and 75 cents per box net for russet.

This does not fully present the

condition as bad as it really is, owing to the fact that the data is all made up from sales through the auction, through which only the better grades of fruit are sold, as a rule, while the poorer grades are sold through private sales, the average price received for such sales not appearing in these figures, which would no doubt lower the general average.

Surely the time is here when there should be concerted action looking to the producing of a better quality of fruit, establishing standard grades and pack to be uniform for the entire citrus production of Florida, and the elimination of inefficiency in grading and packing. Our advantages over California in the flavor and quality of the juices of citrus fruit are largely overcome in the markets by the California grower producing a cleaner finished fruit in appearance and keeping the packing up to required standard. With nature doing more for us than any other section, if we but do our part in the production and packing of our fruit, the competition will be largely minimized and the marketable value of our product materially increased.

CITRA FRUIT COMPANY TO MARKET THROUGH AMERICAN FRUIT GROWERS

It has just been announced that the Citra Fruit company, of Citra, Fla., has recently contracted with the American Fruit Growers Incorporated to handle the marketing of its output in the future. The Citra Fruit company packs the "Mocking Bird" brand, one of the foremost citrus brands of Marion county, and ranking among the very best in the state.

Marion county is particularly noted as the home of the genuine Parson Brown orange and also for the exceptionally fine quality of the Pineapple oranges which it produces.

It is a recognized fact that the Pineapple oranges in the vicinity of Citra are the finest oranges of that variety grown anywhere, the soil and other conditions being particularly adapted to its culture and the fruit having a very high color and an exceedingly fine flavor. These oranges consequently demand a distinct premium in the larger and most critical markets of the country.

A large volume of this exceptionally fine fruit will be packed next season by the Citra Fruit company under its "Mocking Bird" brand, which will be used on fruit grading up to the required standards in connection with the "Blue Goose" trade name of the American Fruit Growers Incorporated, which has made such a remarkable record during the past season. In addition to the very considerable quantity of its own fruit, the Citra Fruit company will pack under its brand the crops of a large number of the best growers in that territory. Electric marking machines will be installed in the packing house for individually branding fruit of the "Blue Goose" quality.

D. S. Borland, of Fort Myers, Fla, who has large grove interests in Lee county, is also a prominent factor in the Citra Fruit company, he having continuously maintained his interests in fruits in the Citra section since about 1885. Before and at the time of the disastrous freeze in 1895 Mr. Borland and his brother were among the heaviest shippers in the state.

For the past ten years, and until its recent alignment with the marketing service of the American, the Citra Fruit company has marketed through the Florida Citrus Exchange.

The "Mocking Bird" brand is noted for the uniform excellence of its grade and pack. The volume of its output next season will far exceed that of any previous year.

ACME FRUIT COMPANY WILL MOVE PACKING HOUSE TO STATION

The Acme Fruit company's packing house in White City, St. Lucie county, will be moved to the White City station, enlarged and improved, and equipped with the most modern packing machinery on the market. This notable improvement has just been announced by the owner, Milton Bacharach of New York and Fort Pierce.

The lot which will be occupied by the new packing house fronts on the railroad and the asphalted White City road and is in size 111 by 322 feet. The start on the work of moving the packing house has begun and will be completed in time for the season next fall.

The house itself will be 56 by 100 feet and will have a capacity of 1,700 boxes a day. The Skinner system will be used and the cost will be approximately $10,000. A spur will be run from the railroad and the cars will be loaded from the door of the packing house. This improvement is one of the greatest importance and indicates the growth of the citrus industry in the wonderfully rich White City section.

Mr. Bacharach is one of the progressive investors in this section and is interested in several prominent local enterprises. He has been identified with progressive plans in St. Lucie county for a number of years and thoroughly believes in the future of the country.

GREAT DEMAND FOR OLDSMAR GROVE HEATERS

The demand for the new Oldsmar grove and farm heater has increased so rapidly that the Oldsmar foundry is not able to turn them out fast enough. Additional heaters of the same model are being manufactured in Coldwater, Mich., by the Keller foundry. An order has just been received for 10,000 of these truck farm heaters to be shipped to California, and probably 40,000 more will be shipped there. Already 17,000 have been actually sold in Florida, and the demand is increasing. This heater, it is claimed, produces more heat units at less expense than any other heater on the market and sells for less money. H. D. Keller and John Keller have come here from Coldwater, Mich., to have a conference with H. J. Keller of the Oldsmar Tractor company regarding plans to take care of the increasing business. It is said that a large addition to the Oldsmar foundry will be required at once. It is expected to double the present floor capacity. The Oldsmar foundry has been working to its full capacity and the Coldwater plant has been shipping castings from Michigan to help take care of the rush of heavy business.

OLD BUSINESS

I left my dad, his farm, his plow,
Because my calf became his cow;
I left my dad—'twas wrong, of course,
But my pet colt became his horse;
I left my dad to sow and reap
Because my lamb became his sheep;
I dropped my hoe and hit New York
Because my pig became his pork;
The garden truck I made to grow
Was his to sell, and mine to hoe.
Believe me, too, I had to hoe—
There was no riding down the row.

NEW BUSINESS

With dad and me it's half and half—
The cow I own was once his calf.
I'm going to stick right where I am
Because my sheep was once his lamb.
I'll stay with dad—he gets my vote
Because my pig became his pork;
No town for me—I'll stick right here,
For he's made me tractor-engineer.
It's "even split" with dad and me
In a profit-sharing company.
We work together from day to day—
Believe me, boys, it's the only way.

Says Nitrate Supply is Increasing

To the Editor of the
Citrus Industry:

Such interest as farmers have shown in the proposed government operation of the Muscle Shoals nitrate plant is based upon belief that it would increase the supply and reduce the cost of fertilizers. That operation of the Muscle Shoals plant might accomplish this desirable result would seem to be indicated by statements issued by the special committee of the American Farm Bureau Federation recently appointed to investigate the question. These statements, however, are contrary to the facts as known to the ammonia industry and the United States Department of Agriculture. We would appreciate the publication of this letter setting forth the true facts as we understand them.

(1) The committee finds that "the world is running behind in the production of nitrogen." The fact is that there is a surplus of nitrogen producing capacity throughout the world and an actual surplus of nitrogen in this country for fertilizer uses. Reporting on this subject to the Senate, February 17, 1921, (Senate Document 410, 66th Congress) the Department of Agriculture stated (page 5) that stocks of nitrate of soda already in this country were "sufficient for deliveries and contracts for the entire year of 1921." In the same report (page 6), it is estimated that in 1920 the domestic production of sulphate of ammonia was 490,000 tons, that in 1919 the domestic consumption for all purposes was 285,319 tons, and that at the date of the report (February, 1921) there was about 100,000 tons in the hands of producers and fertilizer manufacturers. Before the war we imported sulphate of ammonia. Due to the increase in the by-product coke oven capacity, to supply the enormous war requirements for nitrogen, we have now a great surplus for export. Nitrogen was demanded for high explosives in such enormous quantities during the war that every country expanded its production to the limit. When the war demand was suddenly shut off, the producing capacity created by the war was found to be in excess of the peace time demand.

(2) The committee also finds that "the price of Chilean nitrate is increasing as its supply becomes more inadequate." The fact is that the prices of Chilean nitrate and other forms of nitrogen have been steadily decreasing because the supply exceeds the demand. The above quoted report of the U. S. Department of Agriculture says on this subject:

"The price (of nitrate of soda) has declined to nearly the pre-war price." (page 14).

"The present price of sulphate of ammonia has dropped to about the pre-war price." (page 14).

"The prices of organic ammoniates, including cottonseed meal, animal tankage, dried blood, fish scrap and garbage tankage, have declined, nearly or quite to the pre-war level." (page 14).

(3) The committee finds that the United States has paid enormous sums for Chilean nitrate and that nitrogen from the air should be substituted so as to reduce the demand for Chilean nitrate. But the fact is that no substitute for Chilean nitrate can be produced at Muscle Shoals at a cost as low as the price of Chilean nitrate. Sulphate of ammonia is not a substitute for Chilean nitrate. If it were, this country would hardly be exporting sulphate of ammonia while importing Chilean nitrate at a higher price per unit of ammonia—and that is precisely what this country has been doing for the past two years.

These errors in the committee's report are regrettable, but the fact is the committee did not give itself time to make a thorough investigation of this complicated subject. Only three weeks and five days elapsed between its appointment and the publication of its conclusions. It was authorized to employ technical advisers but did not do so. President Howard advised us that our offer to furnish technical and trade information to the committee would undoubtedly be availed of, but the committee was evidently too hurried to give the necessary time to hear us.

From our knowledge of the Muscle Shoals plant, its possibilities and limitations, we are convinced that a socialistic adventure into the field of industry such as the committee recommends would meet with disaster, and we believe, furthermore, that a thorough investigation by the committee would have convinced it of this fact.

AMERICAN CYANAMID CO.,
By K. F. Cooper, Vice-Pres.

CALETON GROVE ON SHELL CREEK IS SOLD TO ALFRED BANNING

Rupert Smith, an Arcadia real estate dealer, closed a deal recently whereby Al Branning of Lake Wales became the owner of the fine citrus fruit grove of C. C. Carleton, which is situated on Shell creek. The consideration involved in the deal was $100,000 and it was practically a cash deal.

There are 75 acres of old bearing trees and 25 acres of young trees in the grove. The entire tract includes the grove and other lands which amount to 260 acres in all. The deal also includes the handsome residence and large packing house at Punta Gorda which were the properties of Mr. Carleton.

The new owner is an old Arcadian. He lived there ten or twelve years ago, having gone there from Hull, where he was an engineer for the Peace River Land and Phosphate company. He went from there to Lake Wales, where he acquired several orange groves and recently erected a handsome home.

Although Mr. Branning has not made the statement, it was reported on good authority that he would probably move to Punta Gorda, where he can give his new acquisition his personal attention.

Mr. Carleton, who sold the property, is the father of Ray G. Carleton, and he and his son were engaged in the orange business several years before the war.

PACKING HOUSE PERMIT GIVEN

To act as his own contractor, Senator John S. Taylor has taken out a permit to build a packing house on Central avenue and Tenth street, St. Petersburg, to cost $18,000. The structure will extend from Central avenue to the Atlantic Coast Line railroad and will be equipped with modern machinery for washing, grading, sorting and packing oranges and grapefruit.

Senator Taylor has been engaged in the wholesale fruit business in the building at Ninth street and First avenue south, which he leased from Captain Cramer B. Potter, and the lease expired June 1 last.

Senator Taylor is one of the big citrus factors of Florida and owns a mammoth packing plant and large groves at Largo.

MR. GEORGE A. SCOTT,

General Sales Manager of the Florida Citrus Exchange, who is spending the summer in the Northern states.

Relation of Sulphur Plant Food to Production and Soil Improvement

By Prof. George A. Olson, in Address Before American Seed Trade Association, St. Louis, June 22-24, 1921

In connection with your fertilizer business, no doubt many of you have had to search through various text books, encyclopedias and experiment station bulletins for information relative to the merits of artificial plant food. You perhaps have received inquiries concerning the kind and method of applying fertilizers with the object in view of increasing the productivity and improving and maintaining the fertility of the soil.

While wading through this vast amount of literature you no doubt have observed that there are at least ten elements which plants must have, otherwise they would cease to grow. They are carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, calcium, potassium, magnesium and iron.

The carbon is taken up through the stomata or chimneys in the plants in the form of carbon dioxide. Carbon dioxide constitutes a part of our atmospheric air. Oxygen is also taken up and given off through the leaves of plants and its source of supply is the air. All the other elements mentioned enter the plant through the roots.

Within the seed there is contained all of the mentioned elements in sufficient quantities to nourish the seedling and if it is planted in fertile soil the seedling will draw upon nature's storehouse of foods and develop through the various stages to the mature plant containing an abundance of the seeds. In short, this is the cycle of reproduction.

It is now known that in the very early stages of growth, potassium and nitrogen appear to be very prominent and the plant juice contains much sugar. Later on crystals of magnesium oxalate, phosphorus, calcium, sulphur, iron, etc., in their various combinations are identified. As growth advances, less sugar is found in the plant but more of the gum and pectin is formed. The plant toughens and becomes more rigid—cellulose and small quantities of other sugars are recognized. Finally the plant ceases to draw on the soil's stock of plant food. The stage of seed development is reached.

It is observed that the constructed material empties first out of the lower leaves then those situated higher up. A large part of the constructed material travels upwards and ultimately forms the new seed. That is virtually the way crops feed and utilize the plant food. But during this entire period the plant has been supplied with water and basked in sunshine, both of which are indispensable.

Time will not permit a discussion of the theories and facts advanced concerning the complex processes involved in the formation of protoplasm, starch, sugar, gums, etc. However, it will suffice to state that in the protoplasm there is nitrogen, phosphorus, sulphur, carbon, hydrogen and oxygen. Plant cells contain protoplasm and since carbon and oxygen are obtained from the air it follows therefore that four out of the six elements of plant food are derived from the soil. Some of the proteins contained in the plants, and seed, compose the same elements found in protoplasm. All of the proteins contain sulphur. The nodules or legumes are very rich in albuminous or proteinous material and this also is comprised of the six elements which I have mentioned.

Most, if not all, of the literature which you have read treats of three elements of plant food, viz., nitrogen, phosphorus and potassium as the only ones which we should concern ourselves with since the other elements are present in the soil in abundance.

The discussion concerning the importance of three elements of plant food has been based upon field tests and analyses of samples of soil and plants. In this connection it should be stated that in the field tests which have been made at least six elements instead of three have been studied and the deductions made as a result are not at all conclusive. For example, application of acid phosphate on the alfalfa fields of the Pacific West have produced increases in yield. Likewise, agricultural gypsum has produced equally as high and frequently more alfalfa than has been obtained with acid phosphate. In place of one element, acid phosphate contains three, viz., calcium, sulphur and phosphorus.

To make a long thing short, careful experimentation has pointed out conclusively that sulphur and not phosphorus was the cause for the increased yields.

The sulphur content of various soils which have been analyzed show them to contain from 200 to 1200 pounds of sulphur per acre. Most of the soils we find are very low in sulphur. In fact next to nitrogen sulphur is the limiting element since recent analyses of plants show them to contain from one-half to as much sulphur as phosphorus.

The alfalfa requires more sulphur than it does phosphorus. In the light of such facts we are beginning to realize that many of the experiments which have shown increases from the use of acid phosphate were not due to phosphorus as was formerly supposed but the sulphur which was added as sulphuric acid to the rock phosphate. No doubt, some of the soils are deficient in phosphorus and in many cases finely ground rock phosphate has proven this to be a fact. In other instances the sulphur contained in sulphate of potash has undoubtedly been the cause for increased yields because the muriate of potash has not shown the same relative increases.

Accordingly one can readily comprehend that instead of three elements we have been studying the effect of nitrogen, phosphorus, potassium, calcium, sulphur and possibly sodium and chlorine.

Agricultural gypsum is sulphate sulphur and calcium, two of the essential plant foods in highly available form. It has been found that agricultural gypsum is of immense value in connection with the growing of various legumes. It is indispensable in connection with the growing of radishes, cabbages, rape, strawberries and many other crops and the demands, owing to the benefits derived from its use are increasing.

Agricultural gypsum freshens and produces thrifty looking lawns and as time goes on will be extensively used for this purpose.

Agricultural gypsum corrects soils containing black alkali and millions of acres of our unclaimed unproductive lands will be made fit for agricul-

tural purposes following its use.

Agricultural gypsum softens soils which tend to get compact, hard and difficult to work. As a result of applying gypsum to them, better water absorption and tilth have been made possible.

Gypsum can also be added to irrigation waters which tend to make soils hard and impermeable with very good results. Remembering always that hard water makes hard lands soft and soft water makes soft lands hard.

Agricultural gypsum has been mixed with various arsenicals and the combinations have been used as dust sprays with very good results. The potato larvae and striped cucumber beetle have in this manner been very successfully controlled.

Nor is this all; agricultural gypsum has been used for years as a holder of the ammonia which is formed in the manure and under the usual methods of practice is lost. It conserves plant food highly important for crop production and very expensive when purchased. Agricultural gypsum is therefore a means toward conservation.

Agricultural gypsum stimulates nitrification in the soil and as a result brings about a quick response from the plants.

A TALK TO FLORIDA CITRUS GROWERS ONLY

(Continued from Page 7)

in the form of scale-destroying fungi that aid in keeping at least one great group of insects fairly well controlled.

The Labor Problem

I cannot help but believe that this very fact has deterred citrus growers from looking into the profit-making side of spraying as well as they ought to, and from doing their spraying with the high degree of efficiency the operation merits. True enough, much of the spraying that is done, is performed by incompetent negro labor, and as one Florida grower tersely stated to me not long ago, "the Ethiopian skull must be taken into consideration."

It is not easy to overcome the matter of incompetent labor. All fruit growers suffer to a considerable extent from no-brains at the end of the spray rod. But this incompetency is reduced as the superintendence is improved. A good boss of the spraying gang can get a good job of spraying done, regardless of the lack of intelligence on the part of his helpers. Better do the bossing yourself, and then you will know it is well done.

Florida citrus fruits deserve a better deal in spraying than it has had. Florida growers deserve a better profit than they have had. Both will come, and come as surely as a new day, by the application of the right spray at the right time and in the right way.

OBJECT OF BOYS' AGRICULTURAL CLUBS

1. To give the farm boy a chance to make some spending money.
2. To teach him the business side of farming.
3. To teach him better methods of farming.
4. To teach him the value of co-operation and team work.
5. To teach thrift.
6. To develop character and citizenship.
7. To make the farm home comfortable and attractive.

BEHOLD! THE FIG

How much importance do we give the fig? How many rural families in Florida include in their home orchards this most luxuriantly yielding fruit? Are you among those who depend upon this tree for a part of your table sweets, or are you among those who place no importance on this fruit of biblical times?

There were $60,000 worth of figs produced in Florida in 1920. This is a figure small in comparison with the value of the orange, the grapefruit, or the guava crops, but large in the sense that few people place any importance whatever upon this fruit.

We are now in the midst of the fig harvest. The more we see and taste of the fruit, and the more we think of the possibilities offered by the fig, the more we feel like advocating its culture.

Every family could have a half dozen fig trees as easily as not. It thrives on all kinds of Florida soils, from the thinnest sandy ridge to the heaviest river bottom. It is adapted to all climatic conditions prevailing in the state. It accommodates itself to practically all Florida conditions. If given any chance whatever, it will yield bounteously.

Do not attempt to grow any and all varieties, for only a few are adapted to Florida conditions. C. K. McQuarrie, state agent of the Florida agricultural extension division, of Gainesville, recommends the Celeste above all other figs for this state. He places the White Adriatic second and Brown Turkey third. He says that the Black Genoa is suited to the clay soils of north Florida.

It is true that our figs cannot be depended upon as a commercial fruit, but there is no better one for making sweets for the home table. Try them.

FLORIDA INSECTICIDE COMPANY AT APOPKA DESTROYED BY FIRE

Fire totally destroyed the main plant of the Florida Insecticide company at Apopka on June 23. Estimated damage was $20,000. The building, which was a frame structure, caught fire from a cause unknown. All efforts of the Apopka fire department to put out the blaze were of no avail. The plant is partially covered by insurance.

Until the plant is rebuilt all orders will be filled from the branch office at Haines City.

VERY CAPABLE

A sea captain, holding a glass of lime-juice approvingly up to the light, said:

"Navies are different today from what they used to be. A man was talking to an old sailor. The sailor said:

" 'Yes, sir, my boss was in the navy, too.'

" 'In the navy, was he?' said the man. 'What was his official capacity, may I ask?'

" 'Four to five quarts, sir,' said the old sailor."—Washington Star.

THIRD AND FOURTH WHAT?

"Ickie," said Isabel Nelson's mother, "you stood on the porch quite awhile with that young man last night."

"Why, mother," replied Ickie, "I only stood there for a second."

"Yes," said her mother, "but I'm sure I heard the third and fourth."

With fertilizers down where they bear some relation to farm produce prices, the farmer may well decide to give his crops the plant food they need.

PRINTING

Citrus Growers and Shippers

Will find this office especially equipped for handling citrus printing of all kinds. Whether it be a thousand letter heads, a hundred thousand shipping tags, or a booklet in colors, you will find that our equipment was designed particularly to meet your needs.

Citrus Printing is Our Specialty

We make a study of the needs of citrus men and our printers have been educated along the lines of highest perfection in the art as applied to the citrus trade. We solicit your next printing order, fully confident that a trial will make you a permanent patron.

Promptness of execution, attention to detail. satisfaction in service characterize the work turned out by our presses.

Call, write or phone

Bartow Printing Co.

A. G. Mann, Manager

Bartow, - - Florida

Owned and operated by THE CITRUS INDUSTRY---the only exclusive citrus publication.